TriAqua

SPLIT MULTIFUNCTIONAL GEOTHERMAL HEAT PUMP

(Heating, Cooling and Domestic Hot Water)

Built-in 2 water tanks

Refrigerant R-410A

3GEO-15
3GEO-19
3GEO-23

INSTALLATION AND START-UP MANUAL

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1. INTRODUCTION

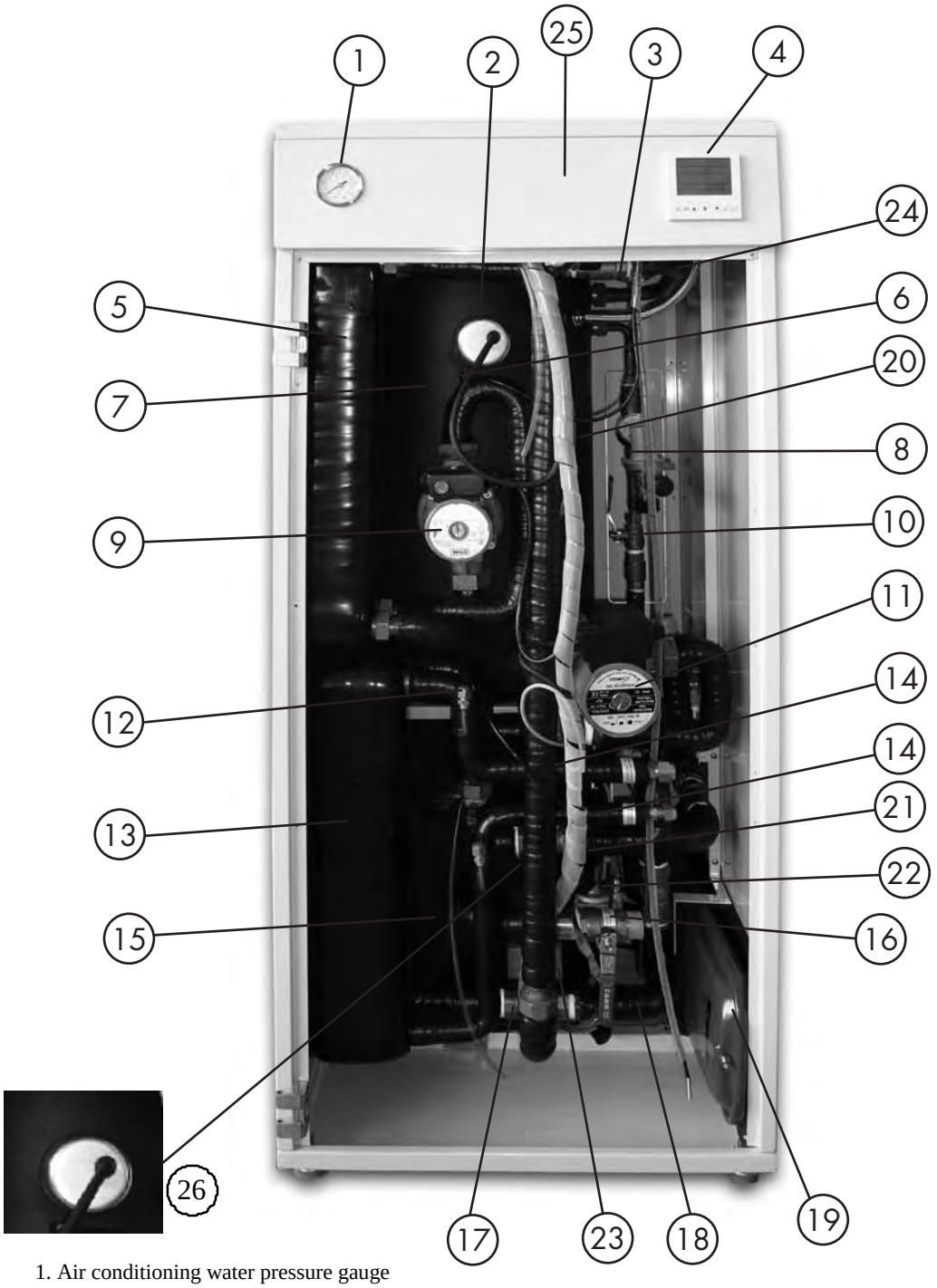
The unit purchased by you has been subjected to strict quality control before leaving the factory. It also me ets the safety standards of the CE. Do not tamper with the unit ,or subject to conditions of work not specified in this manual, you may lose any guarantee on it. The repair and maintenance must be con ducted by your service / maintenance installer.

It is the responsibility of the installation company performing the installation in accordance with the characteristics the project, subject to the regulations. Before installating the necessary equipment read this manual, and carry out the directions and obserations in it.

This equipment should be installed only by a duly accredited professional. The manufacturer does not responds to any damages and / or indirect, caused by improper installation.

You should check the receiving unit, which is in perfect condition. If otherwise appropriate to make a written complaint to the carrier.

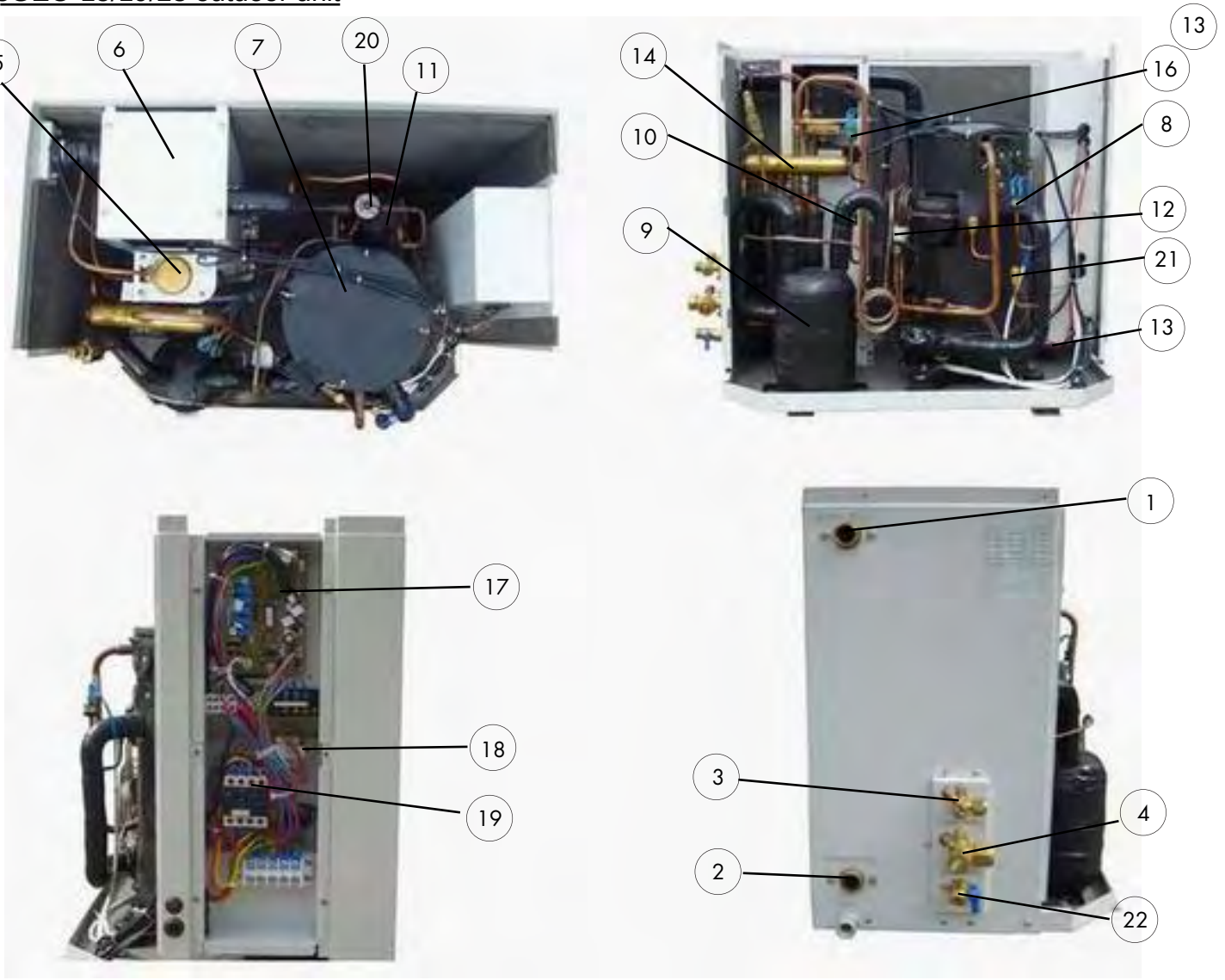
Indoor Unit (all models)



1. Air conditioning water pressure gauge
2. Electric heater 2kW with thermostat for DHW
3. Check Valve ¾ " for DHW
4. LCD controller
5. Heat exchanger for DHW
6. DHW temperature sensor
7. DHW accumulation water tank
8. Check Valve ½ " for DHW
9. DHW water pump (secondary)
10. Check Valve ½ " for DHW
11. DHW water pump (primary)
12. Air Conditioning Water inlet temperature sensor
13. Air conditioning Heat exchanger
14. Air conditioning water shut off valve 1 "
15. Air conditioning water tank
16. 1-way electric valve
17. 3-way electric valve
18. Air-conditioning water outlet sensor
19. Air conditioning expansion tank
20. DHW safety valve
21. air conditioning control safety valve
22. 1-way electric valve
23. 3-way electrical valve
24. DHW expansion tank
25. Electric control box
26. Electric heater 3x2kW with thermostat for A/C

2. DESCRIPTION OF THE UNIT

3GEO-15/19/23 outdoor unit



1.water inlet
2. water outlet
3. Liquid connection
4. Gas connection
5. Flow switch
6. Temperature control plate heat exchanger
7. Compressor
8. Low pressure switch
9. Gas-liquid separator
10. High pressure switch
11. High-pressure liquid accumulator
12. Bypass valve
13.Compressor crankcase heater
14. Four-way valve
15. Compressor Capacitor
16. High pressure switch
17. Electronic board
18. Transformer
19. Contactor
20. Thermal expansion valve
21. Needle valve
22. Drain valve

3. TECHNICAL DATA SHEET

TECHNICAL DATA			3GEO-15	3GEO-19	3GEO-23
Heating	Nominal capacity	kW	13,20	17,30	21,00
	Power input	kW	3,05	3,65	4,80
	COP	W/W	4,33	4,74	4,38
Cooling	Nominal capacity	kW	15,10	18,80	23,20
	Power input	kW	3,25	3,95	5,20
	EER	W/W	4,65	4,76	4,46
D.H.W.	Nominal capacity	kW	12,50	16,10	19,40
	Power input	kW	3,80	4,75	5,65
	COP	W/W	3,29	3,39	3,43
Electrical power supply		V/Ph/Hz	230/1/50	400/3/50	400/3/50
Gas line		Inches	3/4		
Liquid line		Inches	3/8		
Compressor type			Scroll		
Refrigerant type			R-410A		
Refrigerant load		Kg	3,0	3,15	4,1
Temperature control accumulator volume		Litres	50		
D.H.W. maximum pressure		Litres	90		
Temperature control maximum pressure		Bar	3		
Temperature control expansion tank volume		Litres	6		
D.H.W. maximum pressure		Bar	7		
D.H.W. expansion tank volume		Litres	2		
Temperature control input/output		mm	28		
Tap water input		mm	15		
D.H.W. output		mm	15		
D.H.W./Temperature control safety valve		mm	15		
Drain valve		mm	15		
Dimensions	Indoor unit	mm (Height xWidth x Length)	1.360x590x590		
	Outdoor unit	mm (Height xWidth x Length)	645x692x452		
Dimensions Packaged Product	Indoor unit	mm (Height xWidth x Length)	1.470x650x650		
	Outdoor unit	mm (Height xWidth x Length)	700x750x500		
Net weight	Indoor unit	kg	128		132
	Outdoor unit	kg	70	75	80
Packaged weight	Indoor unit	kg	140		144
	Outdoor unit	kg	75	80	85
Noise level	Indoor unit	dB(A)	28		
	Outdoor unit	dB(A)	32	33	34
Maximum pipe length		m	50		
Maximum height difference		m	30		

NOTES:

Heating:
- Indoor inlet/outlet water temp. 30°C/35°C
- Outdoor inlet brine temp. 0°C

Cooling:
- Indoor inlet/outlet water temp. 23°C/18°C
- Outdoor inlet/outlet brine temp. 30°C/35°C

4. ELECTRICAL DATA SHEET

Power consumption

TECHNICAL PROPERTIES		3GEO-15	3GEO-19	3GEO-23
Operating voltage	V/Ph/Hz	230/1/50	400/3/50	400/3/50
Minimum voltage	V	200	345	345
Maximum voltage	V	253	440	440
Power consumption				
Nominal cooling *	kW	3,25	3,95	5,20
	A	14,1	5,70	7,51
Nominal heating **	kW	3,05	3.65	4,80
	A	13,3	5,27	6,93
Nominal D.H.W. ***	kW	3,80	4,75	5,65
	A	16,5	6,86	8,16
Maximum cooling	kW	4,05	5,25	6,25
	A	17,6	7,6	9,0
Maximum heating	kW	4,20	5,20	6,30
	A	18,3	7,5	9,1
Maximum D.H.W.	kW	4,20	5,20	6,30
	A	18,3	7,5	9,1

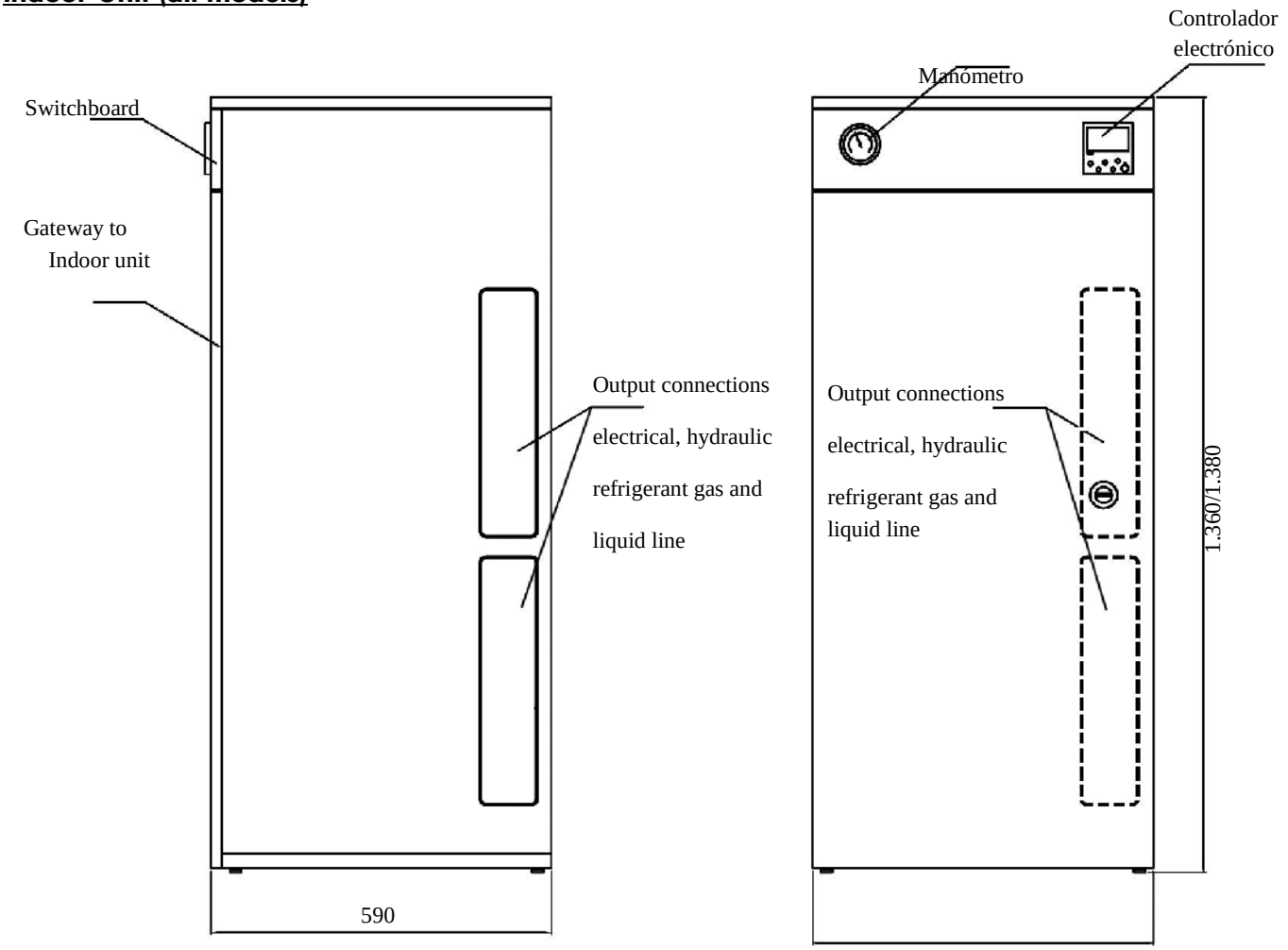
NOTES:

* Indoor inlet/outlet water temp. 23°C/18°C ; Outdoor inlet/outlet brine temp. 30°C/35°C

* * Indoor inlet/outlet water temp. 30°C/35°C ; Outdoor inlet brine temp. 0°C

* * * Water storage temp 40°C; Outdoor inlet brine temp. 0°C

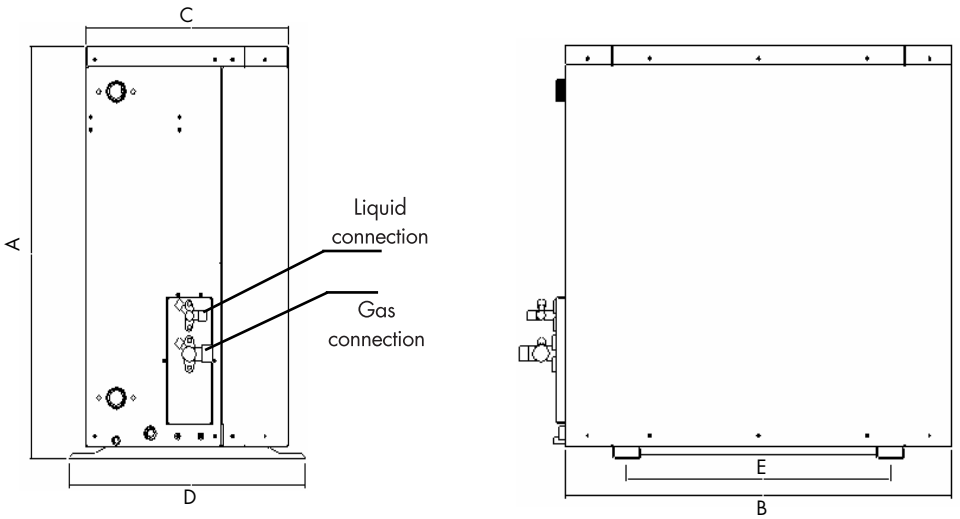
Indoor Unit (all models)



NOTA:

Dimensions in mm.

Outdoor Unit Dimensions 3GEO-15/19/23

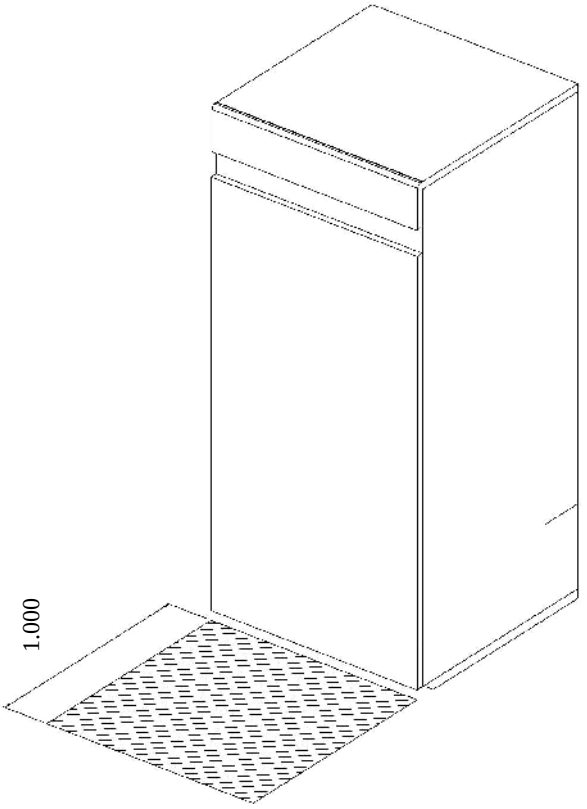


MODEL	MEASUREMENTS (in mm)				
	A	B	C	D	E
3GEO-15	645	692	452	470	420
3GEO-19	645	692	452	470	420
3GEO-23	545	692	452	470	420

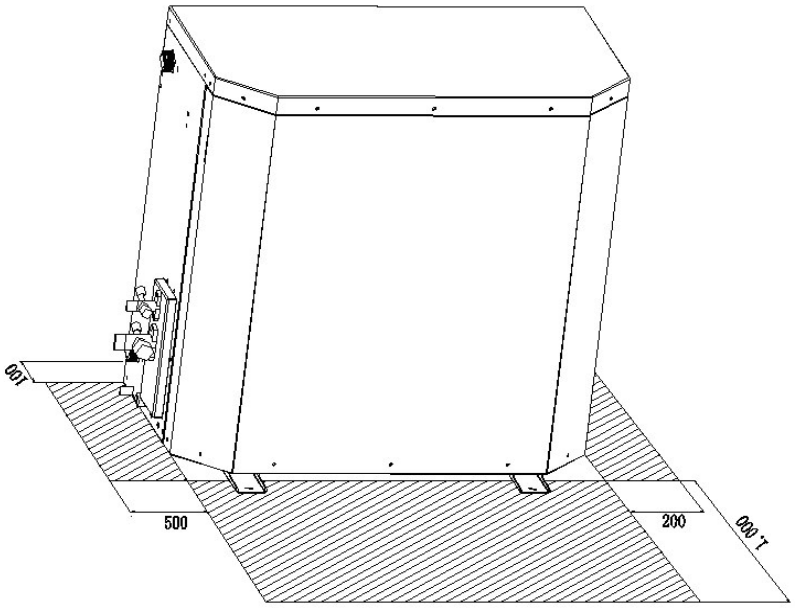
7. SERVICE AREA

The following is the minimum space needed to carry out the tasks of service and maintenance of the units.

Indoor Unit (all models)



Outdoor Unit (all models)



NOTE:

Dimensions in mm.

AIR CONDITIONING WATER PUMP

The selection of coolig water pump to be mounted by the installer out of the unit should take based on the flow rates of cooling and heating,internal drop unit (see graph) and the drop of the facility.

Calculation of nominal water flow:

Q water (l / h) = Cooling Capacity* 0.86 (Kcal / h) / △T (º C)

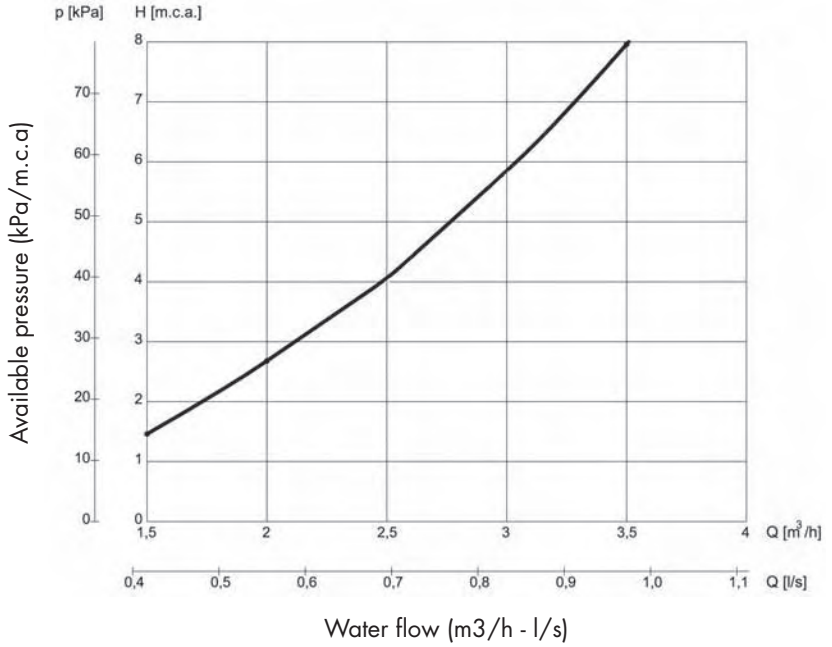
As △T = (T first exit water temp - water return Temp) _T = 5 º C

Example: Model 3GEO -15

Q water = (16,300 W * 0.86) Kcal / h / 5 ° C = 2800 l / h

IMPORTANT: The temperature difference in air conditioning heat exchanger should be 5 º C approx.A high temperature difference can cause a malfunction of the unit and even irreparable damage to it.

Pressure drop in the Hydraulic Air Conditioning Circuit (3GEO-15/19/23)



This graph indicates the drop in the pressure of the water in the hydraulic air conditioning circuit (components inside the unit), including plate heat exchangers, water filter, pipes and water hose connection.

The air conditioning pump to be installed outside the unit must be chosen by the installing technician based on nominal cooling and heating flows, on drops in the internal pressure of the unit as indicated in the graph, and on the drop in pressure expected in the installation itself.

9.1 SAFETY CONSIDERATIONS

Here are a series of recommendations to follow for proper installation of the unit.

Installation,repair and maintenance of these units must be made with caution because the presence of electrical, electronic and circuit pressure system refrigerant.Only trained and qualified personnel should perform all installation,adjustment and maintenance unit.

The manufacturer declines all liability for negligence and breach of safety standards described below:

- Work in total safety, free from obstacles and clean environment.
- Comply with regulations.
- Before commissioning of the unit, excellent condition confirm the same and its components.
- Wear safety goggles and gloves while working. Use quenching cloth during operations welding.
- Put in place strong units that can support the weight bearing and allow the right posterior maintaining it.
- Use the specified cables and make a proper connection at the terminals.
- Make a separate attack unit.
- Check the supply voltage corresponds to the plate.
- Perform the corresponding ground.
- Perform the work safely install hydraulic and drainage pipes as shown of this manual.
- During operation of the drive circuit part5s refrigerant.(compressor line download) can reach temperatures. above 70 º C. Take special care when accessing the inside the unit.
- The unit can work in environments "normal" residential, commercial or light industry. The unit can not be installed in explosive atmosphere environment. For applications Special should consult the manufacturer.

Very important!

Before starting the installation or maintenance operations of the unit disconnect switch general power. Electrical shock can cause personal injury.

9.2 LOCATION OF UNITS

Inspect units of receipt to verify any damage or damage during transport. If the unit is damaged you must file a claim immediately to the company who made the shipment.

Interior Location of Unit

The indoor unit is designed for installation inside the housing. For this, the inner cabinet has the same action at its base that a common household. It also has the possibility of adjust its height due to small height-adjustable feet.

When installed inside the unit must be left open the door area access, being necessary to leave the spaces described in paragraph 7 (Service Areas).

Location of Outdoor Unit

The outdoor unit must be placed in proper orientation to climatic characteristics of the region where it is installed.

It should be positioned so that air circulation is free and well avoid recirculation effects detrimental to performance.

When installing the outdoor unit must be left free the front of the unit, which is necessary to leave the spaces described in paragraph 7 (Service).

9.3 HYDRAULIC CONNECTIONS

All hydraulic connections are labeled as shown in Figures 1 and 2:

Figure 1

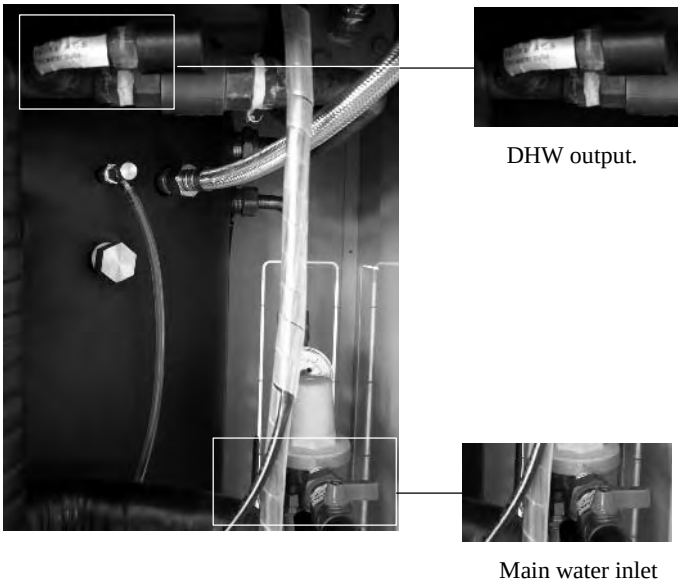
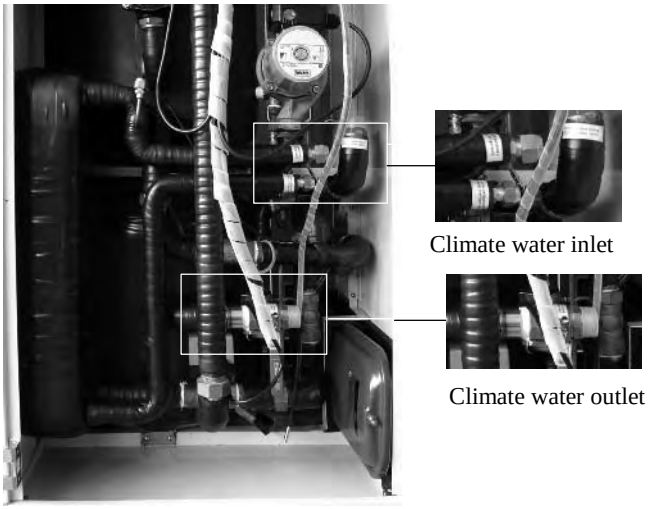


Figure 2

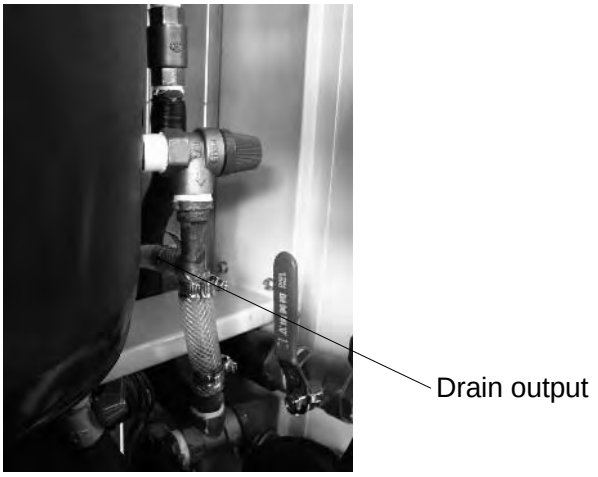


The unit is supplied with a flexible sleeve to facilitate circuit hydraulic connections air conditioning (Figure 3).

Figure 3

It is necessary to conduct the common outlet safety valves of the two tanks to drain (figure 4).

Figure 4



Hydraulic Circuit Climate

- Water pump

The operation of closed circuit cooling, means that water must be transported heating or cooling energy from the unit Triaqua to secondary and this installation is performed by forced circulation water pump.

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This water pump must be placed by the installer and should be calculated for water flow required and to overcome the pressure drop (installation + machine) .See section 8

For electrical connection, see Section 9.4 (Electrical Connections).

IMPORTANT: A small pump may cause a malfunction or even a fault irreparable.

- Flow Switch

To avoid potential problems in the unit for lack of water in the cooling circuit, the unit incorporates a flow switch.

IMPORTANT: The water shortage could cause irreparable damage to the unit.

- Differential pressure valve

To ensure that water always returns to the unit in the cooling circuit,install a differential pressure valve. The differential pressure valve guarantees the minimum flow required for proper functioning of the heat pump when there is closure of the thermostatic valve and limits differential pressure of the installation.

IMPORTANT: If water does not return the unit, it could cause an irreparable damage to that unit.

Filling and pressure testing for DHW circuit

To fill water tank DHW, proceed as follows:

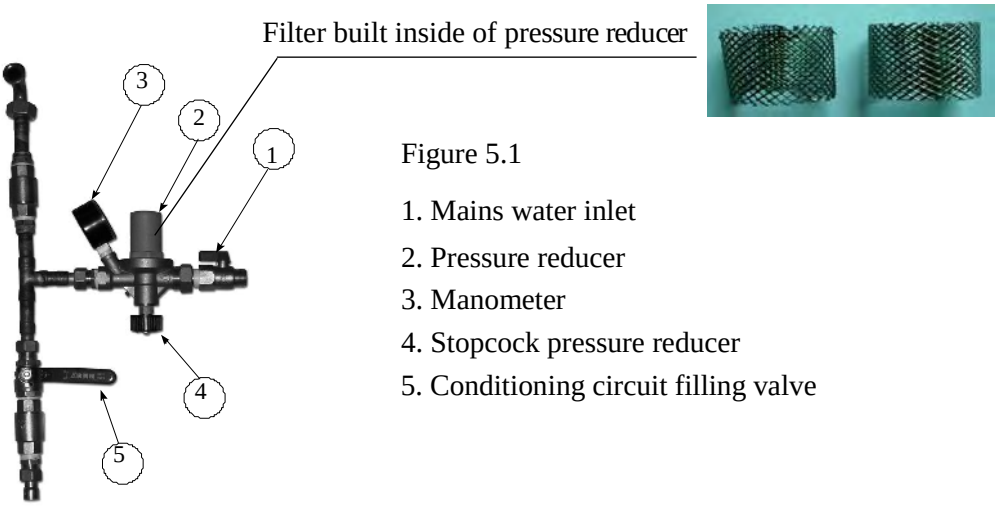


Figure 5.1

1. Mains water inlet
2. Pressure reducer
3. Manometer
4. Stopcock pressure reducer
5. Conditioning circuit filling valve

- - Connect the power supply, NOT SWITCHING ON THE UNIT.
  - Perform opening the water inlet tap the network of the unit (see Fig.5.1)
  - Open tank trap DHW (Fig.5.2) and the bleeder on the top of the water pipe connecting the heat exchanger climate with DHW (Fig. 5.3). Close both traps when you stop air and water comes out.
  - Open a point of hot water consumption to flush the system.
  - The indoor unit includes a pressure regulating valve (factory calibration 2.5 Bar). If necessary, adjust the inlet pressure to the unit (normal 2.5 to 3 Bar).

Figure 5.2

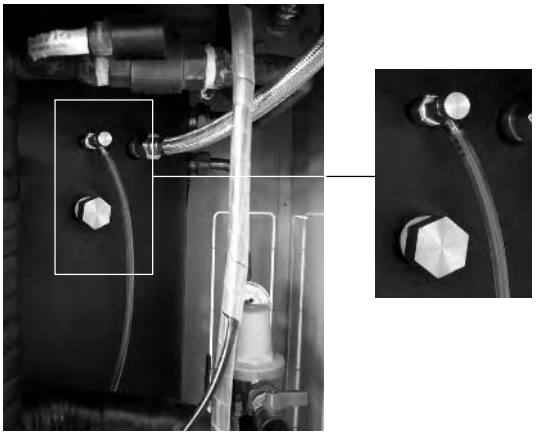
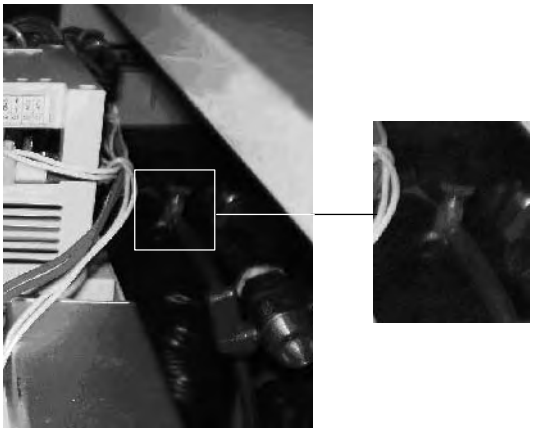


Figure 5.3



- Check the correct rotation DHW pumps through access to the same axis through the screw maintenance.

Filling and Pressure Testing Air Conditioning Hydraulic Circuit

-To fill water cooling tank, proceed as follows:

- Ensure that the secondary installation, underfloor heating, fan-coil, etc, has previously been filled and purged.
- With the tap water inlet of the unit open network (1) Fig.5.1, open the manual filling key conditioning circuit (Fig.6.1) and taps (and out)air conditioning circuit unit.(Fig.6.2).
- 10 ° C AS SET SETPOINT HEATING AND DHW. Put the unit in HEATING up mode.

Figure 6.1

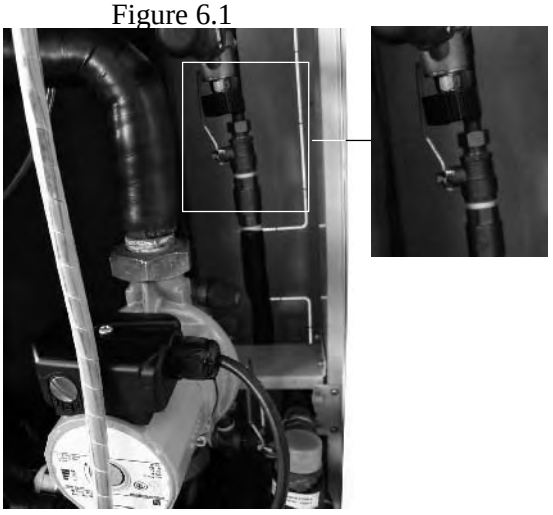


Figure 6.2

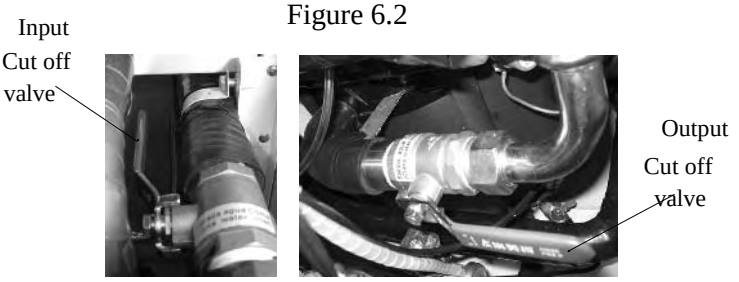
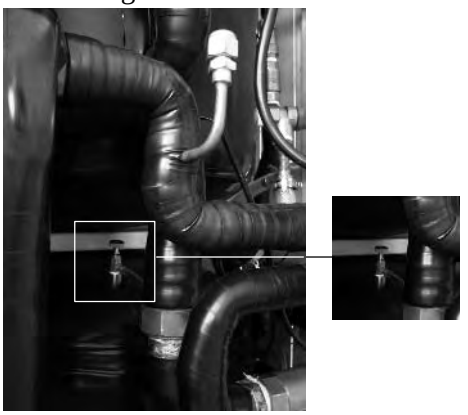


Figure 6.3



- Open the manual trap located at the top of the cooling tank and keep it open until all air is removed from the circuit (Fig.6.3).
- Secondary installation should incorporate a trap in the top. Open the trap if necessary.
- Having gained the venting unit, shut off the circuit manual filling air conditioning (Fig.6.1), the keys must be cut (and out) of the cooling circuit open.
- Check the cooling circuit pressure on the gauge installed in the control panel indoor unit, must be between 1 and 2.5 bar (normal 1.5 bar) for proper operation.
- Ensure that all secondary facility is found with water pressure and completely purged of air. The existence of air in the cooling circuit can cause irreparable damage unit. It is becoming essential to make a proper venting cooling circuit of the installation. For this reason, traps will be installed in the highest part of the circuit housing proceed to remove all air from the facility in an appropriate manner..

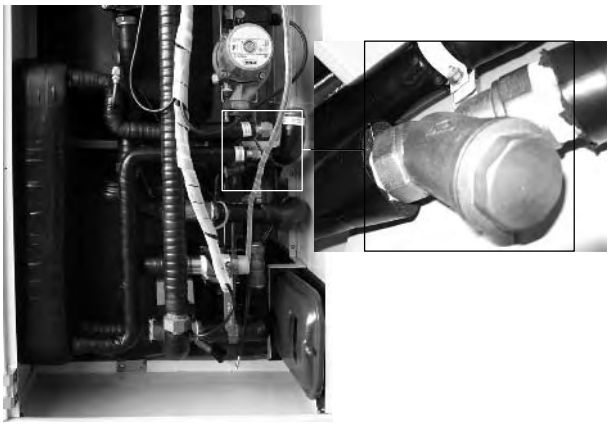
- It is recommended to connect the cooling pump directly to the network, ie, pump-only water-cooling circult for a time,to eliminate the existence of such air circuit.

Attention!

Do not connect the unit for operation of the pump. When connecting the unit and not the water pump independently, it could cause irreparable damage in the unit.

- The unit has air conditioning in the circuit (return) a mesh filter (Fig-7), whose mission is retaining dust or dirt which might remain in the cooling circuit of the house.

Figure 7



Attention!

The dirt from the installation may cause irreparable damage to the unit.

- Once the connections and filling, and prior to starting the unit, it is recommended operating the air conditioning circuit pump for a while, to retain the mesh filter particles and impurities that could be installed. To this should be wired air conditioning pump directly to the network.
- Once that is done, and the pump stopped, it should close the stopcocks input and output conditioning circuit (Fig.6.2), drain water tank cooling through the same drain and clean the filter screen. Then fill again circuit.
- To ensure that no dirt on the circuit, should make this operation as often as necessary.
- Having established that the cooling circuit is clean, insert glycol, if necessary, approximately 20%.
- Should perform periodic reviews, including cleaning the filter screen, to ensure that there is no dirt inside the circuit.

9.4 ELECTRICAL CONNECTIONS

Before any electrical installation work to ensure that the main switch is disconnected.

General Recommendations

- The installer must protect the power line drive disconnecting devices automatic magneto-thermal switch and circuit breaker suitable for installation in accordance with the legislation.
- The power to the unit must be within a range of voltage (see table consumption electric page 8).
- It should pay special attention to the connection of ground wire. The ground wire must be of a length slightly larger than the cable phases. .

Preliminary operations

In the outdoor unit:

- Remove the access panel to the control panel located on the front side of the unit.
- Check that the network characteristics match the data on the nameplate of the unit.
- Perform power and interconnection between the interior and exterior units through the 2 presses on the side of the unit.

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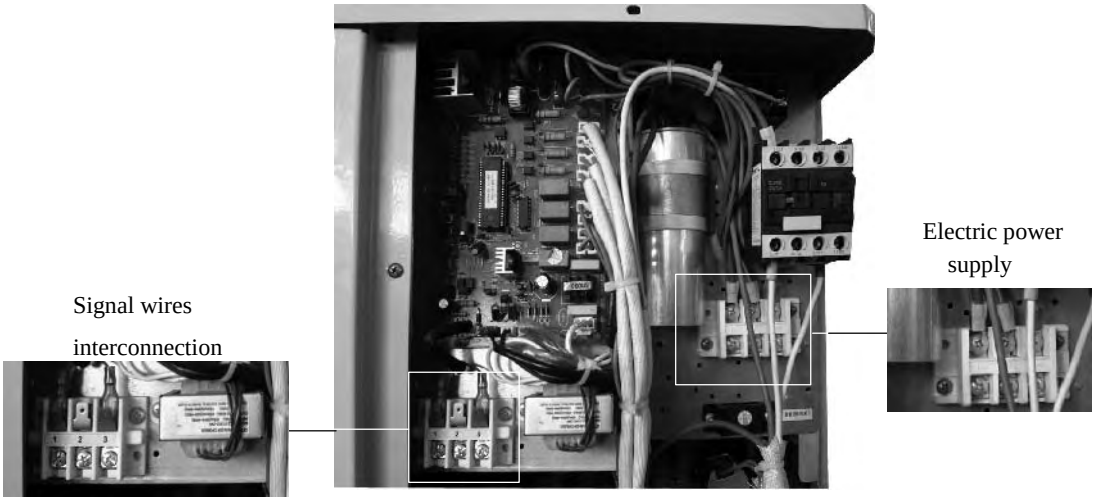
Figure 8



- Ensure that power cords have the correct section for the total consumption unit. See table below.

In indoor unit:

- Open the front panel by turning the key to closing the unit.
- Ar unscrewing the structure of the unit control box, moving outward through support guides, so we have access to the terminals of the unit (Figure 9).

Figure 9

Figure 10

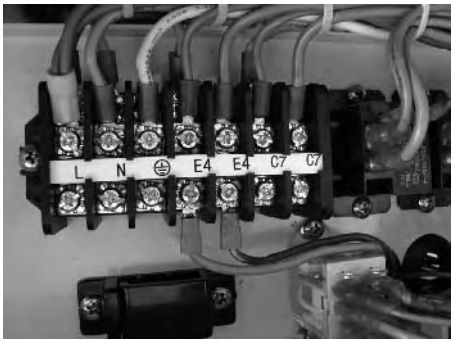
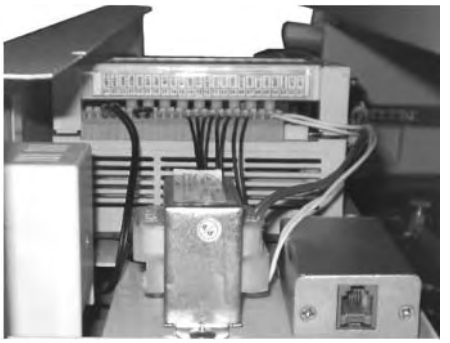


Figure 11



Power supply (connection and interconnection between units)

Before commissioning of the unit must perform the following connections:

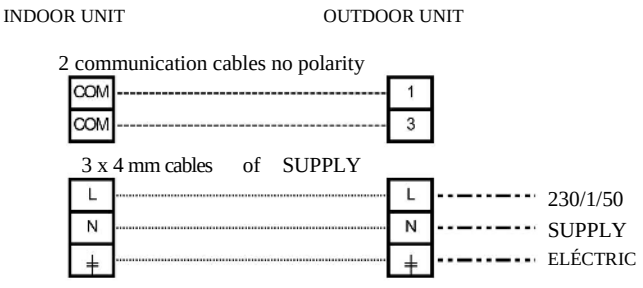
- Mains supply (outdoor unit), Figure 8.
- Interconnection between the outer and inner drive, figures 8, 10 and 11.
- Connect the air conditioning water pump, Figure 10.

MODEL	Outdoor Power SUPPLY	Indoor power SUPPLY	COMMINICATION
3GEO-14	3 x 4 mm	3 x 4 mm	SIGNAL (no polarity) 2 x 0,5 mm
3GEO-19	5 x 6 mm	3 x 4 mm	2 x 0,5 mm (no polarity)
3GEO-23			

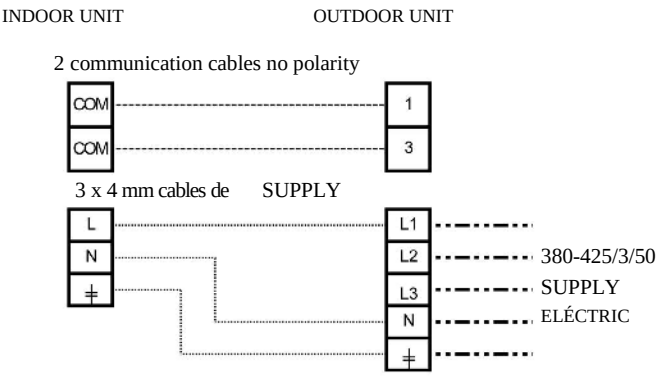
*The power to the indoor unit can proceed directly network or coming from the outdoor unit.

The seperate connection can make the whole system electric current at least 10A lower

MODEL 3GEO -15

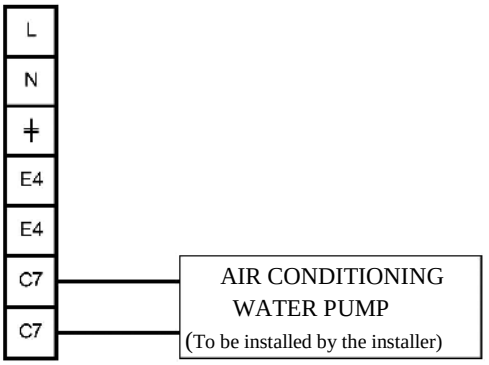


MODEL 3GEO -19/23



Electrical connection of the cooling water pump

INDOOR UNIT



NOTE:
The cooling water pump must be put outside and the electrical connection as shown in this scheme and in Figure 10.

VERY IMPORTANT!: Protection against indirect contact

The installer must protect the power line of the unit with devices automatic switch ,circuit breaker and circuit breaker,suitable for installation according to law.

By incorporating an electric heating unit, it is necessary to take them into account when sizing supply line of the indoor unit.

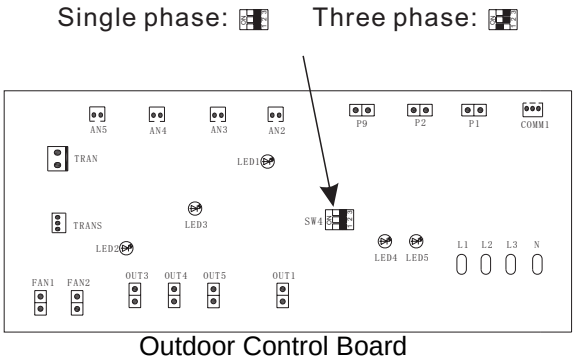
Power cables of the unit type can not be lighter than coated flexible cable

Ordinary polychloroprene (designation H05 RN-F).

The commissioning of the unit in an incorrect line voltage is not covered under warranty

Triaqua. Pay special attention to the connection of the protective earth cable. Must be the first connecting cable and its length must be greater than that of the wires.

* Switch between single phase and 3 phase by setting dip switch on outdoor control board



Outdoor Control Board

* Other dip switch meaning of SW4

SW4-2 off means for Triaqua heat pump
SW4-2 on means for Monobloc heat pump

SW4-3 off means for air source heat pump
SW4-3 on means for Water source/Geothermal heat pump

9.5 REFRIGERANT SYSTEM CONNECTIONS

General considerations

The interconnection lines refrigerant is as follows:
- The indoor unit has identified the taking of gas and liquid, with stickers identifying, the follows:
  Gas line: Gas (coolant) / Gas (refrigerant)
  Liquid line: liquid (coolant) / Liquid (refrigerant)
- All refrigerant connections, as well as water, are threaded.
- You have to isolate the lines to avoid condensation and heat loss.
- Once you have installed the lines, to empty into the circuit refrigerant indoor unit until a -1 Kg/cm2 pressure for at least 2 hours.
- The discharge circuit refrigerant and refrigerant charge can be made through service valves located on the right side of the outdoor unit.
- Check for leaks in the circuit refrigerant.

Connection between units

In indoor unit:

The indoor unit is equipped with a coupling to l evar lines threading the area of output connections indoor unit (see paragraph 6.Dimensiones scheme) and since the connections are made .
The indoor unit comes with a dry nitrogen load incorporated. The refrigerant lines of the units interior are a series of adapters and nuts to ensure proper seal until use.

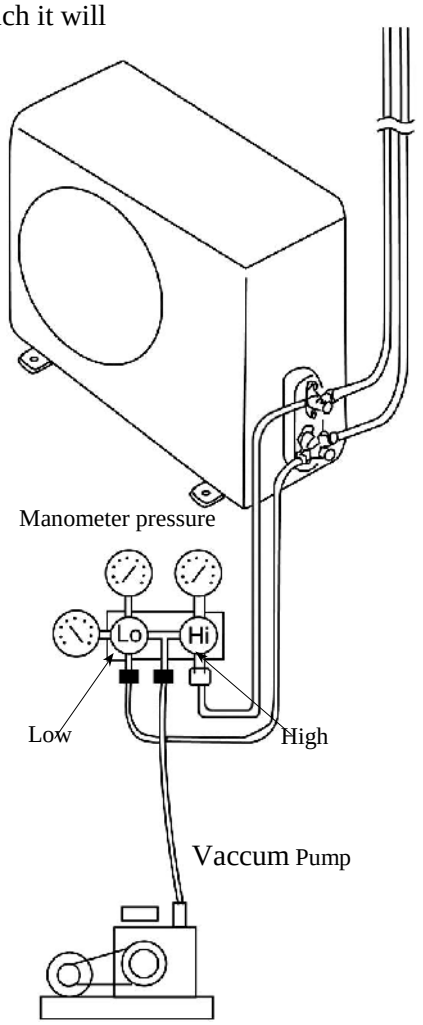
Gas valve and liquid valve coupling

In OUTDOOR UNIT:

The outdoor unit is shipped with a load of R - 410A applies to a line length maximum equivalent of 5 meters. For lengths over 5 meters is necessary to add load according to the table in paragraph 9.7.

9.6 CONDUCT OF VACUUM REFRIGERANT SYSTEM INSTALLATION

Once the connection refrigerant system between indoor and outdoor, and once it has been found tightness of this connection, we proceed to the realization of the vacuum in the unit to which it will the following process:



- With the outdoor unit's service valves closed (as the unit is delivered from the factory), remove the plugs of these service valves.
- Connect the pressure gauge connection in the following way:
  - Make the low pressure gauge connection to the gas service valve.
  - Make the high pressure gauge connection to the liquid service valve.
  - Make the centre bridge of the gauge connection to the vaccum pump.
- keep the pump running and open the valves of the bridge of gauges, so that we ensure the refrigerant circuit system depression by both refrigerant lines and the indoor unit.
- Perform a vacuum to ensure that the gauge indicates 1 bar.
- Once the vacuum to turn off the bridge of gauges and off the vacuum pump, making sure that pressure is maintained vacuum for at least 15 minutes.
- If pressure is not stable means there is a leak in the circuit, so you need to locate and remedy it. Once cured repeat the above steps.
- If vacuum pressure is stable (it may already be done when necessary refrigerant charge) disconnecting the bridge gauge of the vacuum pump first, and keep the bridge gauge closed ends connected to the valves or service lines, as appropriate for each model.
- The outdoor unit is shipped with a charge of refrigerant R-410A is valid for a length of line maximum equivalent of 5 meters.
- Perform opening the service valves.
- For superior line lengths to 5 meters, recharge the unit as shown in table recharge refrigerant.

NOTE:

- To recover all the refrigerant charge in the outdoor unit for maintenance, just to shut off the liquid valve. After the pressure is reduced to 0 Pa, shut off the gas valve

9.7 REFRIGERANT CHARGE (R-410A)

The outdoor unit incorporates the refrigerant charge (R410A) necessary for the proper functioning of the unit to a length of interconnecting pipe 5 meters.
If the interconnection line is greater than 5 meters, we should make a refrigerant addiction according to the following table:

Additional refrigerant charge (g / m)

DIÁMETER	3/8”	5/8”	3/4”
LÍQUID	60	-	-
GAS	-	8	10

NOTE:
- Enter the refrigerant charge in liquid phase.

9.8 PRESSURE MEASUREMENT. LOCATION

OUTDOOR UNIT

In the outdoor unit has two pressure connections (suction and compressor discharge), through which pressure can be measured evaporation and condensation of the system in any three functions (DHW, Heating and Refrigeration).

Indoor unit

Indoor unit incorporates two pressure taps, which DHW mode heating and high pressure measured, and so measured cooling low pressure.

High or low pressure, depending Operating mode

10.1 CHECKS TO BE PERFORMED BEFORE STARTING UP

- Confirm that the power is in accordance with the nameplate of the unit and been conducted according to current regulations.
- Ensure that all electrical connections are well made and according to wiring diagram.
- Check the air conditioning filter is clean water.
- Check that the deposits of inertia of climate and the accumulation of DHWare filled with water and has made the corresponding vent through the manual traps.
- Check the setting pressure filling group. This pressure must always be less than 2.5 Bar
- Check that all door panels are properly mounted with screws for you.
- Check that all valves of the hydraulic system of air conditioning are open.
- The operation and use of electronic control is explained in Chapter 12. Electronic Controller.

10.2 POWER CHECK

After performing the electrical installation manual for installation and connection electrical, check the following:

- Check the firmness of the attachment of power cables and switching in both the outdoor unit and the inside.
- Activate the differential electrical circuit breaker of the unit.
- Check that the tension in the outdoor unit is located between the indicated value range in the table in paragraph 4 (electrical data). If you were outside these values should not be starting the unit.

10.3 TEMPERATURES SELECTION

- The unit is operated through electronic controller multiprocessor.
- To start the unit press the Start / Stop for 1 second.
- You can select the following modes:

• Hot water. The unit produces only DHW

• Water heating and cooling. The priority is to satisfy the demand forDHWwhen such demand is s atisfied, we continued with the production of cold water for cooling.

• Hot water and heating. The priority is to satisfy the demand for DHWwhen such demand is satisfied, we continued with the production of hot water for heating.

- Changing temperatures.

• The unit is shipped with a set point temperature selected by default.

• Modify and adapt these temperatures to the installation of side we have: soil heating, fan coil, etc..

• In extreme weather conditions may be appropriate to amend these

10.4 OPERATION IN MODE D.H.W.(Domestic hot water)

- Enable the operation of the unit in DHW, as indicated in paragraph 12 of this manual.
-Once enabled mode, the unit will start to get selected setpoint temperature. Having gained such a set temperature ,the unit will stop.
- Check the pump rotation DHW.
-In the first implementation of the unit, you should consume DHW to the temperature of selected accumulation.

10.5 OPERATION MODE AIR CONDITIONING

-Enable the operation of the unit heating or cooling mode,as shown in paragraph 12 of this manual.
the unit will start and send hot or cold water (depending on heating or cooling)

- After you enable the selected mode, and whenever the unit is not working hal and DHW mode, the unit will start and send hot or cold water (depending on heating or cooling of the secondary cooling circuit to achieve the set temperature selected.

-Once you have obtained this temperature, the unit will stop, but the cooling water pump continue in operation.

- In operation for heating and cooling, check the water temperature drop (Temp drive - T ª return). This jump should be about 5 ° C.

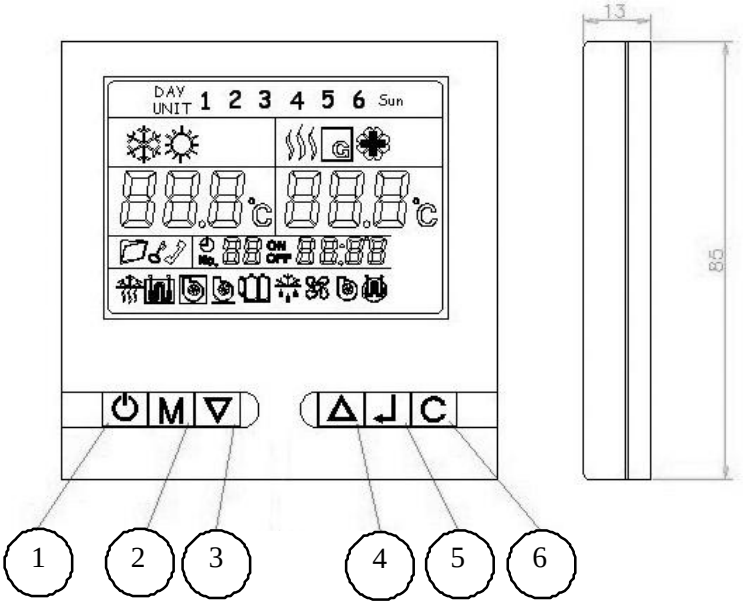
The control panel is located on the top of the unit for all model:

11.1. Pressure indicator

The pressure indicator shows the water pressure of the air conditioning circuit, which must always be between 50 and 250 kPa (0.5 and 2.5 bar).
If the pressure is outside of these limits, call the support service..

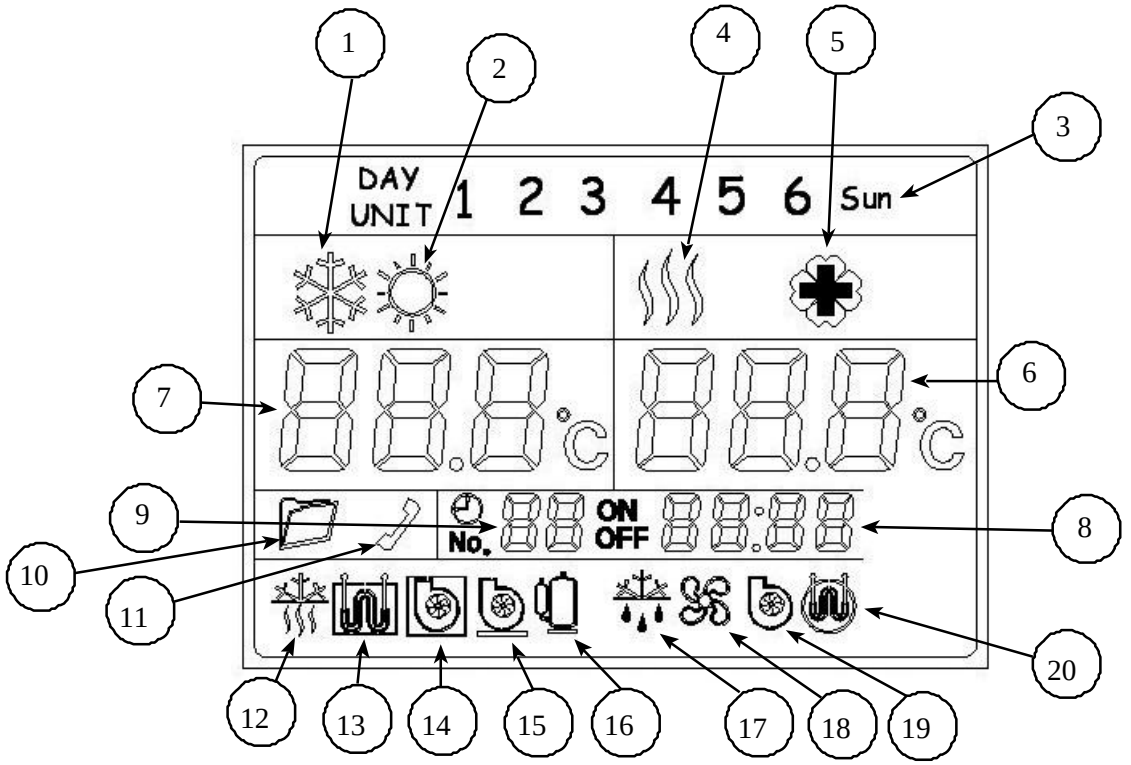
11.2. Electronic control system

The unit is managed using a multiprocessor electronic control system.
The user interface is made up of a Display, which shows the status of the unit, 6 keys for selecting the operating mode, the desired temperature, etc. and a status LED.



1. On/Off
2. Operating mode selector (M)
3. Down Cursor ▼
4. Up Cursor ▲
5. Enter. Confirmation
6. Clear Button (C)

11.3. Display



The following information can be seen on the user Display:

1. Cooling operation mode.
2. Heating operation mode.
3. Day of the week.
4. D.H.W. operation mode. (domestic hot water mode)
5. Antibacterial function.
6. D.H.W. Temperature
7. Air conditioning Temperature (Cooling or Heating).
8. Clock.
9. Timer.
10. Programming Display.
11. Remote phone control (Not available now).
12. Antifreeze.
13. Air conditioning backup electric heater (not available now).
14. Water pump C7.
15. Air conditioning water pump C8.
16. Compressor.
17. Defrost.
18. Outdoor fan.
19. Water pump C5.
20. D.H.W. backup electric heater

12.1. Switching the unit on and off

To start the unit, press and hold the on/off key for one second.
To stop the unit, press and hold the on/off key for one second.

12.2. Selecting the operating mode

The following operating modes can be selected by pressing the key (M):

- Domestic hot water . The unit will only produce D.H.W.
- Domestic hot water and cooling. The priority is to satisfy the demand for D.H.W., and when satisfied, the unit will continue to produce cold water for cooling.
- Domestic hot water and heating The priority is to satisfy the demand for D.H.W., and when satisfied, the unit will continue to produce hot water for cooling.

When the unit is switched on by pressing the on/off key the last operating mode used in the unit is applied.

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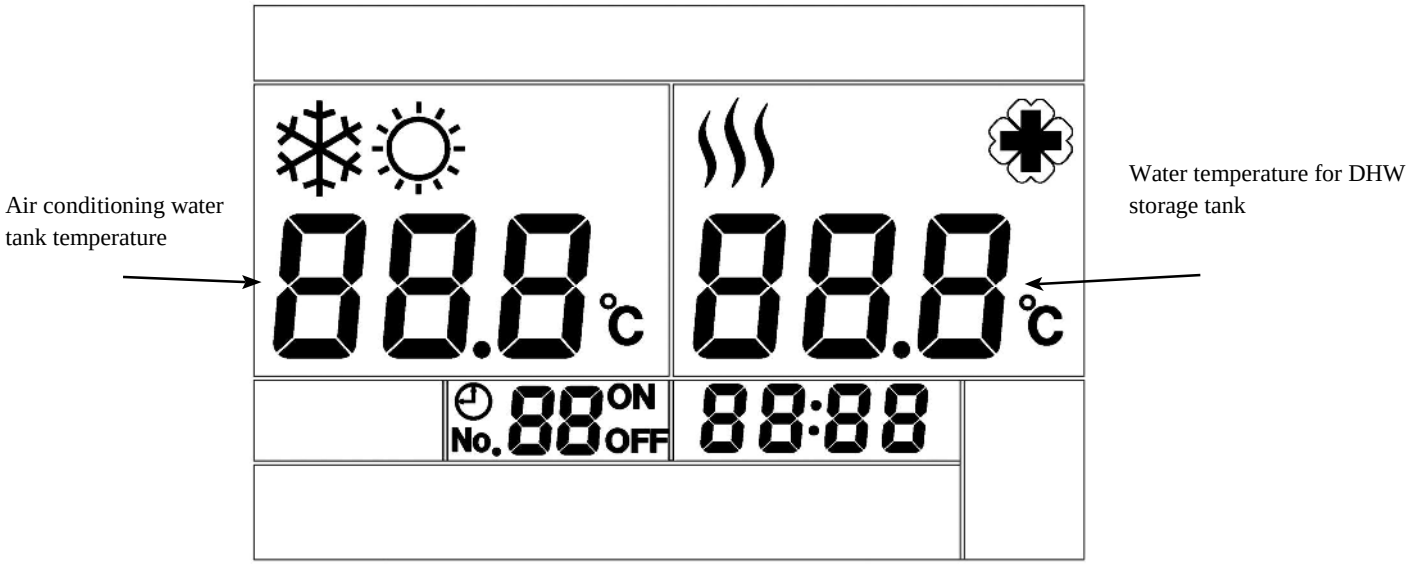
12.3. Indication of the operating mode

The icons that appear on the display for the selected operating mode are indicated in the following table

OPERATION MODE	ICON
D.H.W.	
D.H.W. + Cooling	+
D.H.W. + Heating	+

The symbol appears on the display automatically when you connect the electric heater of DHW to prevent the formation of bacteria.

12.4. Displaying and changing temperatures



The temperature of air conditioning (cooling or heating) appears on the left side of Display.

The water temperature for DHW storage tank appears on the right side of Display.

The unit is shipped with a set point temperature selected by default. These temperatures are ideal for proper operation under normal conditions. In extreme weather conditions may be appropriate to amend these set point temperatures. It is recommended that the modification of these temperatures is made in consultation with your installation / servicing.

The temperature setpoint can be changed within the range listed in the table below:

	TEMPERATURE		
	MINIMUM	MAXIMUM	DEFAULT
D.H.W. (Accumulator tank)	10ºC	50 ºC	45 ºC
Heating (Temp Return)	10ºC	50ºC	40ºC
Cooling (temperature Return)	10ºC	25ºC	12ºC
Anti-bacteria	60ºC	70ºC	65ºC

To change the temperature for air conditioning return (either for heating or cooling), accumulation DHW and Anti-bacteria:

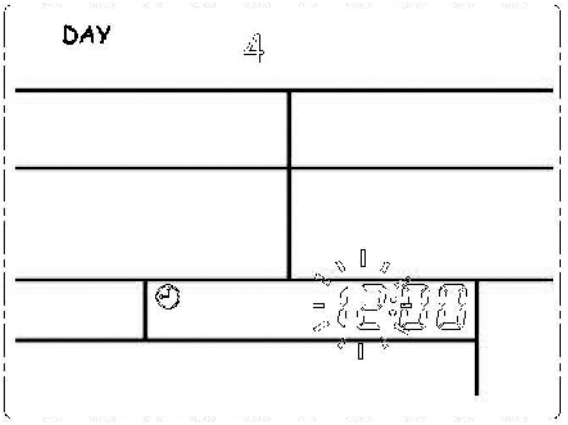
- Press (M) and (C) simultaneously for 3 seconds until the digits on the left side of the screen (temperature of heating / cooling) blink.
- Selected by pressing the (M) key operating mode. Cooling ❄ or heating ☼, D.H.W. and Anti-bacteria.
- With the keys ▲ and ▼ select the desired temperature.
- Press (↵) to confirm the selected temperature.
- Press (C) to exit the programming box.

12.4.1 Programming of the anti-legionella (antibacterial function)

- Press (M) and (C) simultaneously for 3 seconds. Enter the selection mode temperature controller.
- Press (M) to reach the antibacterial function.
- Using buttons ▲or ▼ select the desired temperature resistance for this function (60 to 70 º C).
- Press (↵) to confirm.
- Flashes the number of days (the default is 7 days).
- Using buttons ▲or ▼select the number of days between a process of Anti-bacteria and the following (values between 7 days and 99 days).
- Press (↵) to confirm. Word ON is lit and flashing digits on the clock time.
- Using buttons ▲or ▼ to select the start time.
- Press (↵) to confirm. Disappears and appears illuminated ON/ OFF and flash the minute digits on the clock
- Using buttons ▲or ▼ select minute cycle (values between 10 and 99 minutes). This time start discounting once and has reached the selected temperature in the storage tank.
- Press (↵) to confirm.
- Press (C) to finish. When pressed by the end of the process, would set the defaults above.

ANTIBACTERIAL HEATER FUNCTION			
	MINIMUM	MAXIMUM	DEFAULT
D.H.W. storage max temperature	60 ºC	70 ºC	65 ºC
Temperature differential	2 ºC	15 ºC	2 ºC
Cycle duration time	10 minutes	99 minutes	10 minutes
Time between cycles	7 days	99 days	7 days

12.5. Clock and timer

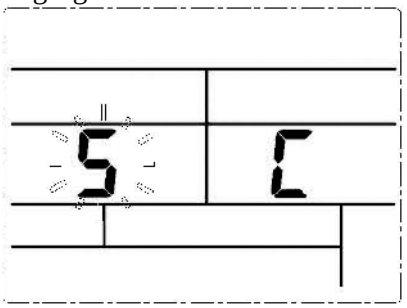


12. UNIT OPERATION

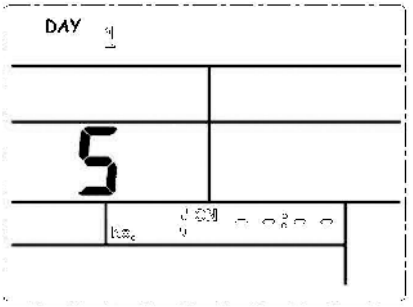
To adjust the clock, must follow this process:

- Press the (M) button for 6 seconds. The digit day of the week begins to blink. For example "4" (Thursday)..
- Press the teclass ▲or ▼ to select the day (between 1 - Sun.).
- Press (↵) to confirm. Then begin to flash the hour digits.
- Press the ▲ or ▼ button to select the hour (between 0 and 23).
- Press (↵) to confirm. Then start the digits for the minutes.
- Press the ▲ or ▼ button to select the minute (0 - 59).
- Press (↵) to confirm.
- Press (C) to exit the programming process at any stage when.
- Pressing (C) before it is finished, the clock will remain with the time that had initially.

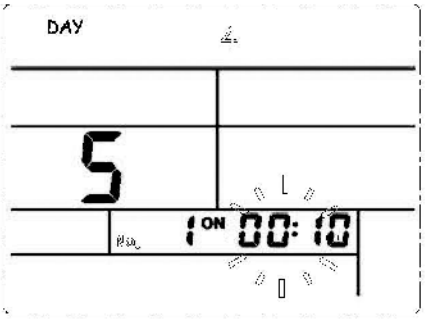
The controller has a timer to set the STARING and stop unit .You can program three starting points (1,3,5) and three stop points (2,4,6) for each day of the week. You can make a separate schedule for each day of the week. There are two types of scheduling "S" and "C". In the "S", programming made is valid only for the current week. In type "C", programming is repeated every week. See the following figure



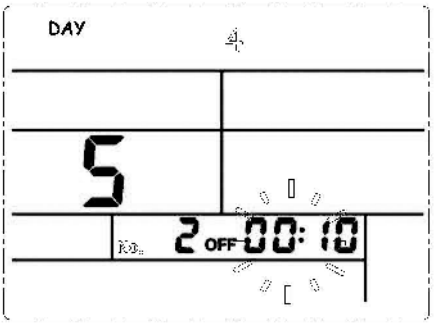
- Press (M) and ▲ keys simultaneously for 3 seconds to enter mode programming schedule. Shows "S" flashing (see figure above). Pressing ▼ changing the type of programming "S" to "C" or reverse.
- Press (↵) to confirm the type of programming desired.
- After selecting the desired program type, the following screen:



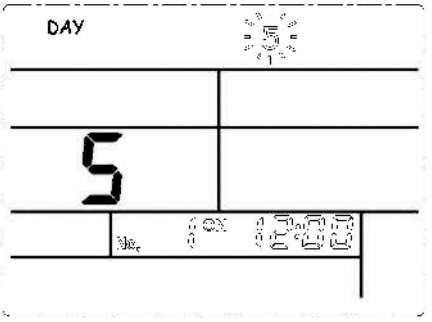
- To set the first point of connection(starting), press the Ⓜ key, the hour digits flash. See figure below



- Set the time of the connection point with the keys ▲ ▼. Each time you press a button increases or decreases the time 10 minutes.
- Press ↵ to confirm.
- To confirm the first connection point (point 1), the screen automatically appears next:



- First point appears "off" (point 2) and the hour digits flash.
- Adjust the time with the keys▲ ▼. Once it's set, press the button ↵ to confirm.
- To confirm the first point off (section 2), the screen automatically appears with the second connection point "ON" (point 3) and the hour digits flash.
- To set the second and third connection point (points 3 and 5) and off (points 4 and 6), proceed as in the programming of the first point (points 1 and 2)..
- After confirming the point of programming a day, the screen automatically appear the next day flashing
- Press ↵ to confirm.
- To set the points of connection and disconnection of the day, proceed as for the previous day. See the following figure..



- Should not be necessary to program a particular day, press (C) to jump to the next day's schedule.
-To cancel all settings, press Ⓜ and▲ simultaneously for 3 seconds to go in the schedules and then press ▲ and Ⓒ simultaneously for 3 seconds. The programming schedule has been canceled.

13. ALARMS

In the event of any malfunction of the unit, the electronic controller will generate an error codes that are reflected in the table below, This code will replace the heating / cooling temperature part of the display on the left and the LED of the display will fl ash red.

* The error code is displayed: the letter in the digit of the temperature of air conditioning and the numbers in the digits of the DHW temperature

* Error codes won't directly display . We must press once ⏎ to see the error code.

Error code	Error code meaning	Error display	Error Reason	Error Solution	LED1 blinks on outdoor control board
E9	Temp sensor of the of D.H.W water error	The compressor does not work in D.H.W. The heat pump will continue to produce D.H.W. with the heater element. Contact your support service	Sensor is broken or the connection is loose	Change or reconnect the sensor	8 flashes and 5 seconds off
E1	Sensor of water outlet from the heat exchanger of the air conditioning circuit error	The unit will continue to operate. The system uses sensor d5 instead of d3.Contact your support service about the problem.	Sensor is broken or the connection is loose.	Change or reconnect the sensor	7 flashes and 5 seconds off
P3	Sensor of water entering the heat exchanger of the air conditioning circuit error	The unit will continue to operate. The system uses sensor d3 instead of d5. Contact your support service	Sensor is broken or the connection is loose.	Change or reconnect the sensor	6 flashes and 5 seconds off
P1	Outdoor unit coil temperature sensor error	The compressor does not work in D.H.W. The unit will continue to produce D.H.W. with the electric heater. Contact your support service	Sensor is broken or the connection is loose.	Change or reconnect the sensor	14 flashes and 5 seconds off
P7	Outdoor air temperature sensor error	The compressor will stop for 20 minutes. It will then continue operating and will replace, sensor A4 by sensor A3. Contact your support, service about the problem.	Sensor is broken or the connection is loose.	Change or reconnect the sensor	5 flashes and 5 seconds off
PD	Not enough water flow, volume in the air conditioning circuit.	The unit will stop air conditioning mode if this anomaly occurs 3 successive times. When the water flow is resumed, the error should be cleared. If this does not occur, contact your support service.	Water flow switch connection loose or air conditioning water flow volume is too small. Or water filter is blocked by dirt -need to clean the filter as per page 18, figure 7.	1. If with water flow switch on the unit, please check if the connection is loose or the water flow switch is broken or the water pump is too small. 2. If without water flow switch on the unit, please check if the short connection wire is loose.	3 flashes and 5 seconds off
EN	Communication error between the indoor LCD control panel and the control board	The unit will stop operating. Contact your support service about the problem.	Communication wire is loose or control board is error.	Check the communication wires and control board. Reconnect the wires or change wires and control board	25 flashes and 5 seconds off
PA	Outdoor Electric connection missing phase protection	The unit will stop operating. Contact your support service	Power cable connection not Correct	Check the electric connection and reconnection the power cable.	1 flashes and 5 seconds off
PA	Outdoor Electric connection wrong phase.	The unit will stop operating. Contact your support service about the problem.	Power cable connection not correct	Check the electric connection and reconnection the power cable	1 flashes and 5 seconds off
E4	Pressure switch jump in high pressure	The compressor will stop. The unit will operate again when normal conditions are re-established. If this does not start, contact your support service	1. Vacuum is not good enough for refrigerant circuit. 2. There is air get inside of air conditioning water circuit. 3. There is dirt in the air conditioning water circuit. 4. Water flow volume is too small, water pump is too small. 5. High pressure switch is loose or broken	1. Check the refrigerant pressure. 2. Clean and purge the air from the water circuit. 3. Clean the air conditioning water inlet filter(Item 26 in explosion drawing) and other filter in the water circuit. 4. Change a bigger water pump 5. Reconnect high pressure switch or change the switch.	9 flashes and 5 seconds off
E5	Communication error between the indoor and outdoor control board	The unit will continue to produce D.H.W. with the heater element and the water pump. Contact your support service.	Communication wire is loose or Control board is error.	Check the communication wires and control board. Reconnect the wires or change wires and control board	2 flashes and 5 seconds off
P9	Pressure switch jump in low pressure	The compressor will stop. The unit will operate again when normal conditions are re-established. If this does not start, contact your support service	1.Heat expansion valve need to be preheated 2.Low pressure switch is loose or broken 3.Refrigerant leak	1.Power off for minutes and power on again then turn on the unit. May repeat this 2 or 3 times to preheat the expansion valve. 2.Reconnect the low pressure switch or change it 3.Check the whole system to see if the refrigerant is leaked.	12 flashes and 5 seconds off
PB	Solar thermal sensor error	Valve control for solar system will stop	Sensor is broken or the connection is loose	Change or reconnect the sensor	4 flashes and 5 seconds off

13. ALARMS

PB	Antifreeze protection(d3 or d4 ≤ 1 º C)	Compressor stop	4 way valve or compressor contactor or compressor error	Check the 4 way valve, compressor contactor or compressor.	4 flashes and 5 seconds off
E5	Error in the EEPROM memory of inner control board	Unit continue working but without historical record	EEPROM chip loose or error	Check EEPROM on the indoor control board	2 flashes and 5 seconds off
P2	Discharge air temperature sensor error	Unit stop	Sensor is broken or the connection is loose	Change or reconnect the sensor	16 flashes and 5 seconds off
E2	Suction temperature sensor error	Unit stop	Sensor is broken or the connection is loose	Change or reconnect the sensor	15 flashes and 5 seconds off
E3	Compressor High temperature Protection (115 ° C air discharge)	Compressor stop to protect the unit, when the temp is lower, the unit will start again. If this error occur twice in 30 minutes, the unit will be locked	1. Refrigerant volume is low 2. Thermal expansion valve error 3. Water flow volume is too low	1. Check the refrigerant pressure and check if there is leakage. 2. Check the thermal expansion valve 3. Check the water flow volume and check if the water pump is small or has dust or other problem.	11 flashes and 5 seconds off
PF	Water source heat exchange not efficient	When unit enter antifreeze 2 times in 30 minutes, show PF The electric heater will start until the water is heated to 65°C	1, not enough water flow volume. 2.Water source heat not enough.	1.Check if water flow is enough 2.Add water pump if necessary. 3.Adjust parameter(5) Outdoor antifreeze entering temp lower.	13 flashes and 5 seconds off
EF	Eo inlet water temp sensor error	Unit stop	Sensor is broken or the connection is loose	Change or reconnect the sensor	21 flashes and 5 seconds off
EA	Eo outlet water temp sensor error	Unit stop	Sensor is broken or the connection is loose	Change or reconnect the sensor	20 flashes and 5 seconds off
P8	Outdoor unit water flow error	Unit stop	Water pump not big enough Water flow switch broken	Add water pump or replace water flow switch	18 flashes and 5 seconds off

14. SOLAR SYSTEM CONNECTION

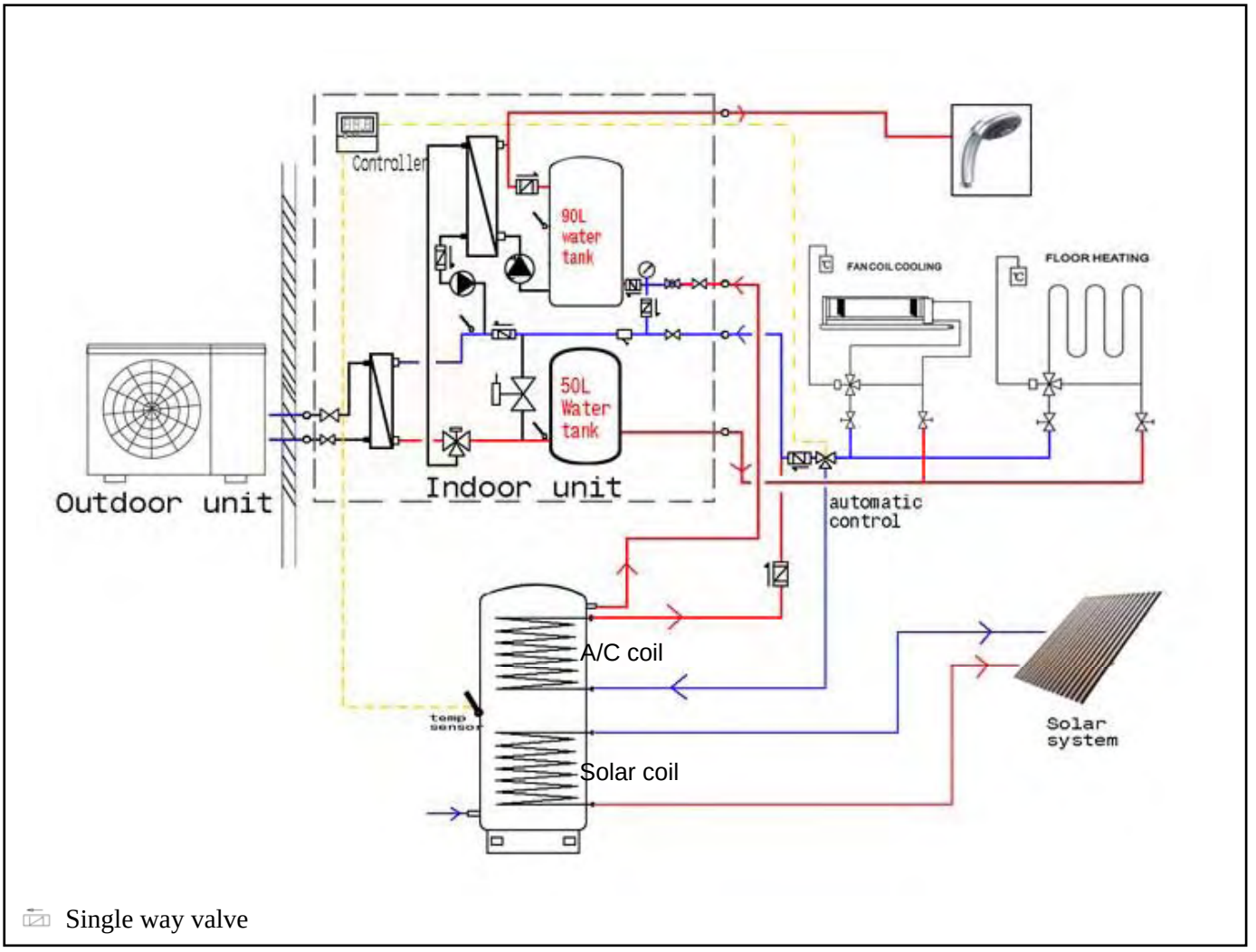
Application 1 (Standard)

Connected with dual coils solar system. Solar preheating can be used for D.H.W and room heating in the same time.

Automatic solar assistant Fuzzy Logic control program built inside to save cost the mostly.

- Our heat pump inner system can compare the solar tank temp and room heating returned water temp. the returned water will go through solar tank if it can get extra heat from solar heating. If in cloudy day, the returned water may not go through solar tank to avoid heat loss.
- For summer cooling circuit, inner program will always shorten the 'cooling' circuit automatically as it no need heat.
- Domestic hot water will always go through solar tank to be preheated.

So the heat pump can have a good rest in sunny day to save cost and work more in cloudy day. Especially excellent for floor heating together with hot water application.



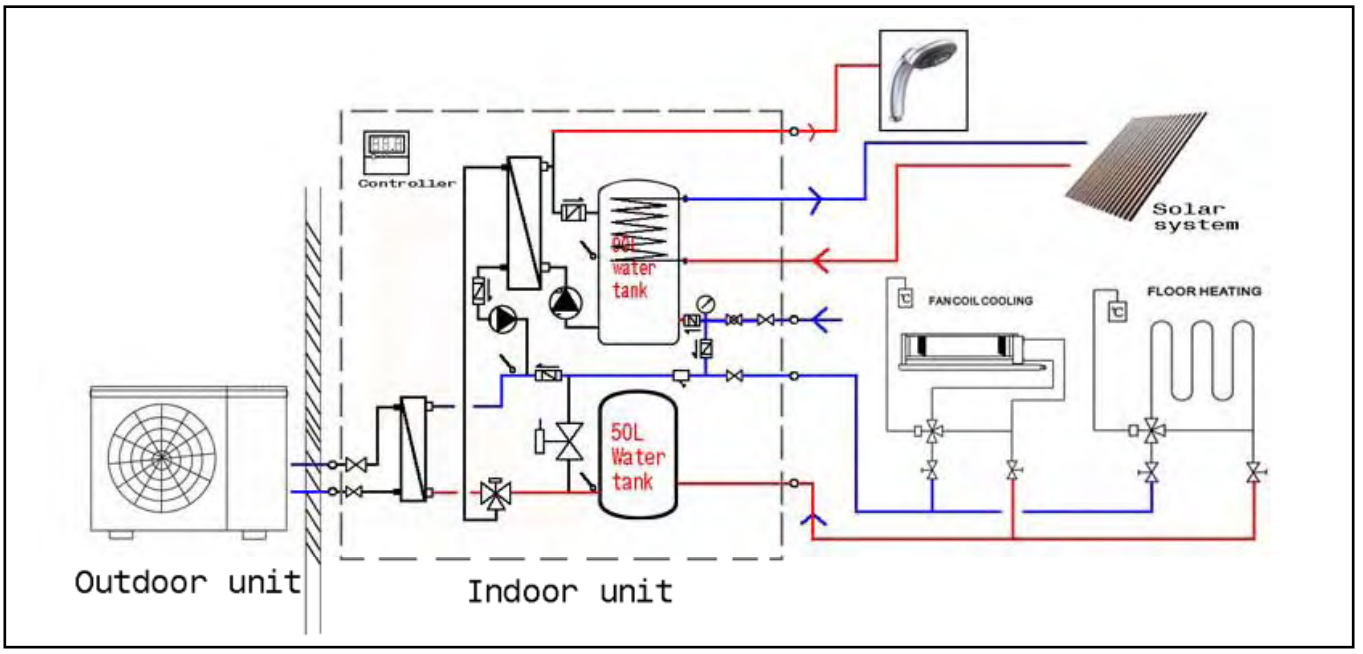
Note:

To make sure the above application working well, note the following procedure

1. Check the indoor wiring diagram in page34 for G2 port and solar water tank sensor location.
2. Solar automatic control 3 way valve(220V) need to be connected to G2 port of indoor PCB
3. Solar tank sensor from indoor PCB need to be put in the middle of the solar water tank and should be located above the solar coil as shown above diagram.
4. Solar system need to be connected with lower coil of water tank ; air conditioning water system need to be connected with upper coil of water tank.

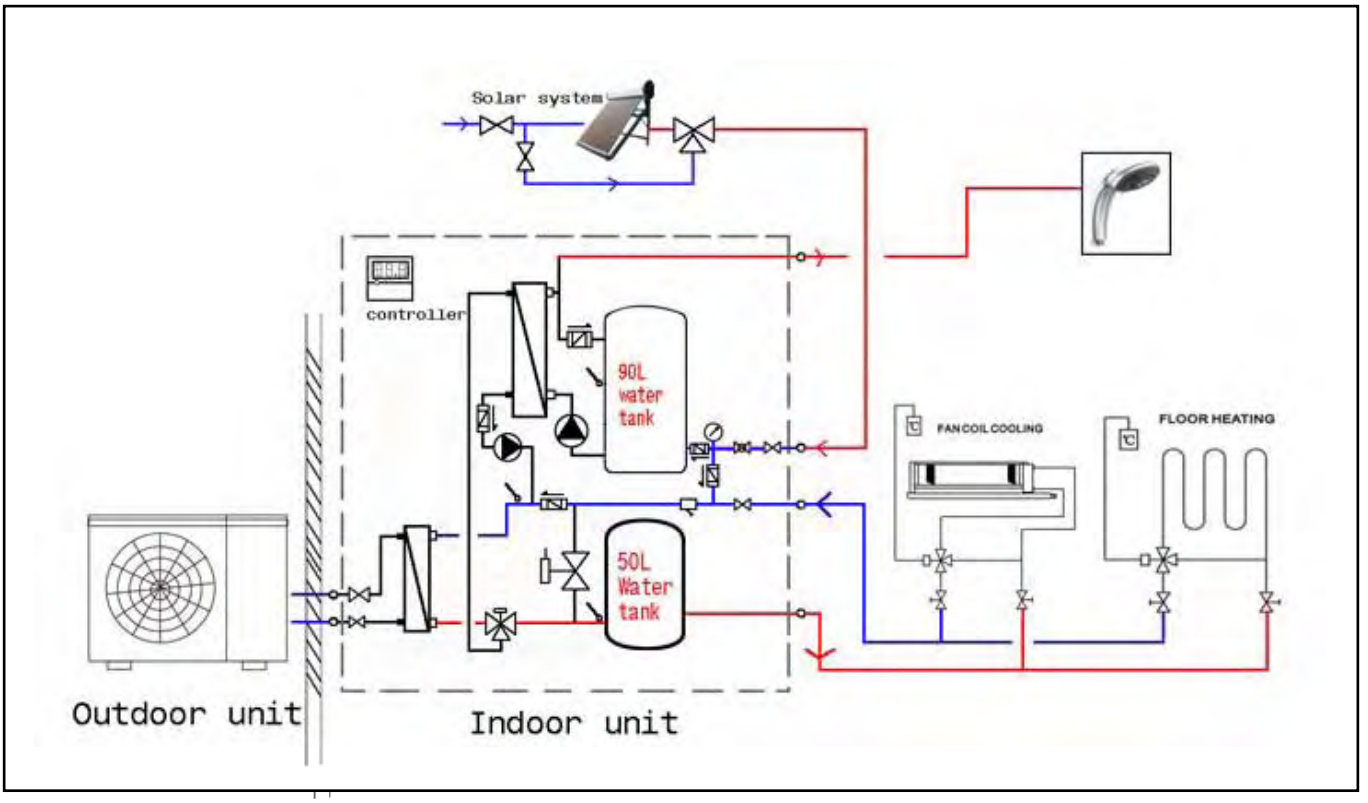
Application 2 (optional- need special requirement for Triaqua inner DHW coil when placing order)

Solar panel or vaccum pipe is directly connected with Triaqua heat pump inner D.H.W water tank coils. The inner recycle fluid can be brine to avoid freeze in winter. It can save one solar water tank cost.



Application 3

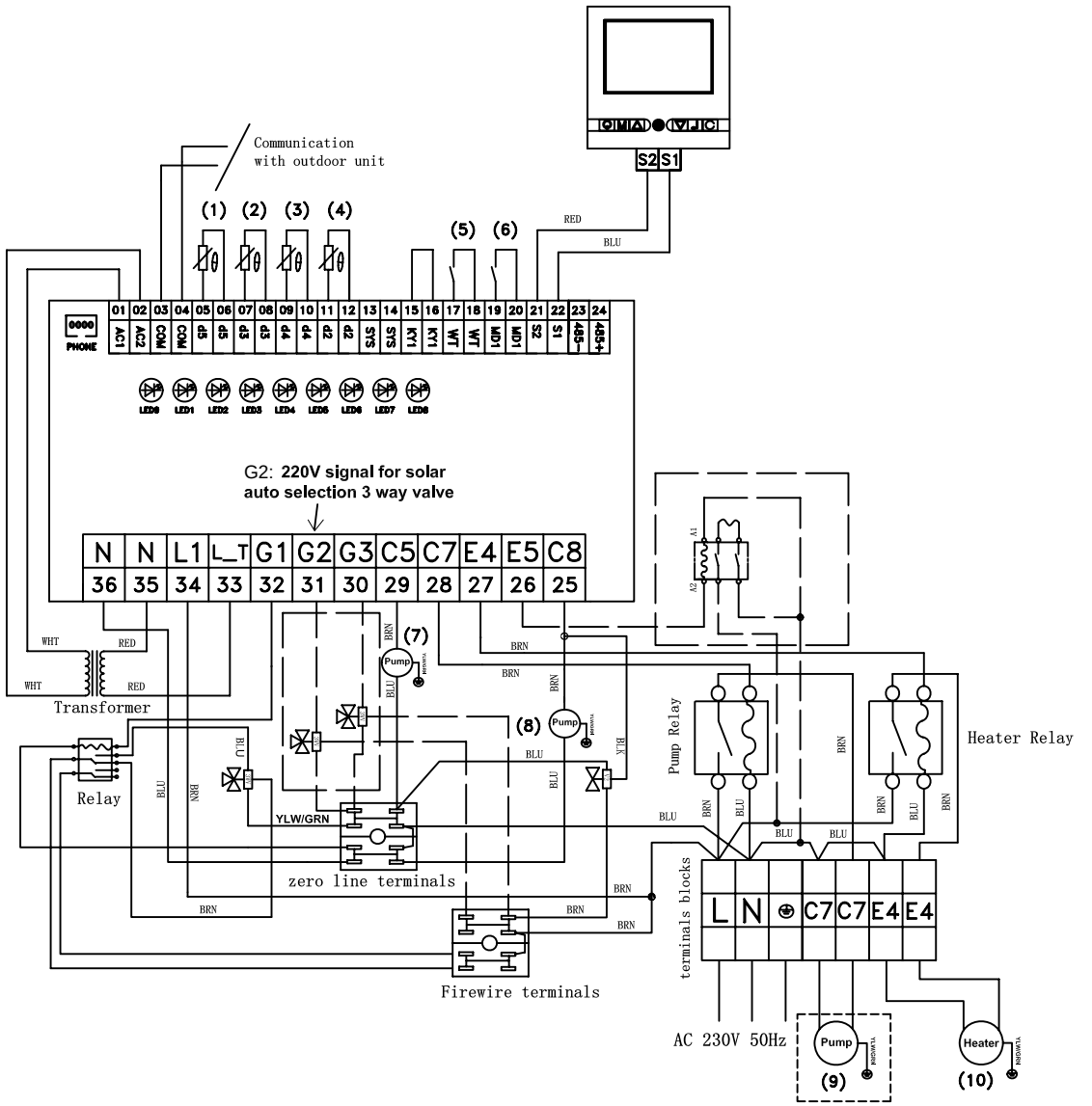
Connected with normal mono type solar system with water tank together with solar vaccum pipes. Applicable for mild weather area.



INDOOR UNIT (ALL MODEL)

ESQUEMA ELECTRICO UNIDAD INTERIOR(11KW/14KW/19KW)

INDOOR UNIT ELECTRIC DIAGRAM(11KW/14KW/19KW)



Script/Leyenda

1	Solar tank sensor	Sonda acumulador solar termica
2	A/C outlet water sensor	Sonda salida agua clima
3	A/C inlet water sensor	Sonda entrada agua clima
4	DHW tank sensor	Sonda temperatura ACS
5	Jumper	Puente
6	Function switch	Interruptor de funcionamiento
7	DHW water pump	Bomba agua ACS
8	DHW water pump	Bomba agua ACS
9	A/C water pump(not included)	Bomba agua clima(no incluida)
10	DHW electric heater	Resistencia electrica ACS

Wires/Cables

BLU	Blue	Azul
BLK	Black	Negro
ORG	Orange	Naranja
RED	Red	Rojo
BRN	Brown	Marron
GRN	Green	Verde
WHT	White	Blanco
YLW	Yellow	Amarillo
GRY	Grey	Gris

G2:For solar Fuzzy logic auto 3 way valve G3:For seasonal auto switch 3 way valve

16. MAINTENANCE

Before any maintenance or cleaning of the unit make sure the switch is off and no power to it

Routine maintenance

This section is intended for end users and is very important to maintain regular operation of the unit over time. A few operations, carried out regularly can prevent serious intervention by the staff.
Necessary operations do not require particular expertise and are summarized in simple controls of some components of the unit.

• With a brush to remove all foreign objects such as paper, leaves, etc, who are on the surface of the outdoor coil..

- Control water flow defrost: During winter operation, occurs from time to time the defrosting of the outdoor coil. You need to check that the drain is not blocked. If drainage is not correct, with cold temperatures, it could form a layer of ice on the base, which would compromise the functioning of the whole system.

Periodic Maintenance

We recommend a regular maintenance by qualified personnel
Here are some checks to be performed:

DHW circuit

• Check direction of rotation of the DHW pump, and the possible presence of air on the pump.
• Check that the pressure of condensation and evaporation in this mode are accurate at all times, depending on the temperature of DHW and outdoor air temperature.
• Check the power consumption (Amps) of the unit operating conditions at that time.
• Check that the unit in this mode to achieve the temperature selection.
• Check that when the temperature drops to DHW temperature selection, the unit starts to operate in this mode.
• Check and clean tap water inlet water filter as shown Figure 5.1

Air Conditioning circuit

• Check direction of rotation of the pump air conditioning, as well as the possible existence of air in the system.
• Check that the pressure of condensation and evaporation in this mode are accurate at all times, depending on the temperature of cooling water flow and outside air temperature.
• Check the temperature drop in cooling water, is within the recommended range. If not, check: water pump, air in the water circuit, dirt in the water system, etc) .
• Check the power consumption (Amps) of the unit operating conditions at that time.
• Check that the unit in this mode to achieve the temperature selection.
• Check that when the temperature drops to air conditioning temperature selection, the unit starts to operate in this mode.
• Check and clean air conditioning water filter as shown Figure 7.

Check List Before Turn On Triaqua Heat Pump

Better to print this page out and make sure that you can tick all of the following items to avoid any problem
After finish the installation tasks, please check the items listed below before turn on Triaqua heat pump

☑ T hings you should have done:

1. Power cable
Check if the power cable is connected correctly, and check if the screws have been screwed down and tight. Please use specified cables. ☐ Y es

2. Communication wire
Check if the communication wire is connected correctly, and check if the screws have been screwed down and tight.Please adopt specified communication wire. ☐ Y es

3. Water circuit
-a. Check if the water pipe s are correctly connected, and the pipe dimensions are correct. ☐ Y es
-b. Check if all the shut off valve and manual valve is opened, check if all the joint is fastened. ☐ Y es
-c. Check if air exhaust valves on the water terminals must be open for the 1st water recycle running to exhaust air in the terminals.This valve can be closed when this valve drain continous water. ☐ Y es
-d. Check if air exhaust valves for the whole water circuit is openned. An automatic purging device has to be installed at the highest point of the water circuit. ☐ Y es
-e. Open the maintenance screw in the middle of the water pumps(for both DHW and air conditioning circuit) and manually rotate the water pump axis. This action should also be done when electric power disconnected for more than 24 hours to avoid block. ☐ Y es

4. Be sure the two water tanks are full of water. If the water tanks are empty, the electric heaters inside is dangerous to be broken. ☐ Y es

5. Insulation test of power supply circuit
Please inspect it by a ohmmeter of 500V
Apply the voltage of DC 500V between the power supply terminal block and the ground wire, test the insulation resistance.The insulation resistance must be more than 2 ohms. ☐ Y es

Triaqua Heat Pump Test Run Procedure

Switch on the power supply

1.The power indicator(LED) will be lighted. The compressor heater will be started. ☐ Y es

2.Turn on the heat pump and check if the heat pump is in air conditioning heating mode, if not, please press M button on the LED controller to change the operation mode to heating mode. ☐ Yes

3.The circulation pump will start before the compressor. Make sure the water pump is working well. ☐ Yes

4.The compressor will be started in 3 minute after powered on. ☐ Yes

MOST IMPORTANT!

1.Make sure it is not in cooling mode during first operation or test running, until you make sure the air conditioning water pump is working properly and water circuit is recycling smoothly.
Recommand to test the water pump working condition and water circuit directly before switch on Triaqua heat pump.

2.Select a big enough water pump for the air conditioning water circuit.

3.Always keep the electricity connection with Triaqua heat pump to enable inner antifreeze function.

TriAqua

❑ E-MTI-0001-10

The manufacturer reserves the right to make any changes without notice.